CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

DATE: July 29, 2002

TO: Interested Parties

FROM: Nancy Tronaas, Compliance Project Manager

SUBJECT: **Sunrise Power Project (98-AFC-4C)**
Staff Analysis of Proposed Project Modification
Simple-Cycle Flexible Quarterly Emission Limits (AQ-17)

On July 16, 2002, the California Energy Commission (Energy Commission) received a request to amend the Energy Commission Decision for the Sunrise Power Project (SPP). SPP is a 320MW simple-cycle natural gas fired power plant that commenced commercial operation on June 27, 2001. The site is located approximately 35 miles southwest of Bakersfield, and one mile southwest of the intersection of State Route 33 and Shale Road in Kern County, California.

The proposed modification will allow for flexible emission limits of criteria air pollutants (i.e., particulate matter, sulfur/nitrogen oxides, volatile organic compounds, and carbon monoxide) on a quarterly basis during 2002/2003. No changes are proposed for daily or annual emission limits. This project change will allow SPP to respond to anticipated surges in peak-period power demands. The Sunrise Power Company is presently in the process of converting the simple-cycle power plant to operate as a combined-cycle power plant by summer 2003, at which time simple-cycle operations will cease.

Energy Commission staff reviewed the proposed petition and assessed the impacts of this proposal on environmental quality, public health and safety, and staff proposes revisions to an existing condition of certification for air quality (AQ-17). The San Joaquin Valley Air Pollution Control District issued a revised Determination of Compliance to allow for this requested modification to simple-cycle operations. It is the Energy Commission staff's opinion that, with the implementation of revised AQ-17, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed project modification will not result in a significant effect upon the environment (*Title 20, California Code of Regulations, Section 1769).*

The air quality staff analysis is attached for your information and review. Energy Commission staff intends to recommend approval of the petition at the August 14, 2002 Business Meeting of the Energy Commission. If you have comments on this proposed project change, please submit them to me at the address above prior to August 14, 2002. If you have any questions, please call me at (916) 654-3864 or e-mail at ntronaas@energy.state.ca.us.

Attachment

Sunrise Power Project (98-AFC-4)
Request to Amend Condition of Certification AQ-17
to Adjust Quarterly Emission Limits and Mitigation Requirements
Joseph M. Loyer
July 23, 2002

AMENDMENT REQUEST

Sunrise Power Company, LLC (SPC) has requested that Condition of Certification AQ-17 for the Sunrise Power Project (SPP) be amended to allow for an adjustment or modification to its quarterly emission limits.

BACKGROUND

SPC was issued a Commission Decision in December of 2000 to construct and operate a 320 MW simple-cycle; natural gas fired power plant near the town of Derby Acres in the western portion of Kern County. The owner is converting the facility to combined cycle operation (for a total of 585 MW). SPP fully mitigated their air emission impacts by providing emission reduction credits (ERCs). The SPP commenced simple-cycle commercial operation on June 27, 2001.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

No federal or local laws, ordinances, regulations or standards will affect or be affected by the modification of quarterly air emission limits.

ANALYSIS

Project Emissions

SPC is requesting that the quarterly emission limits (Condition of Certification AQ-17) be increased to allow for a more flexible operation during times of peak electricity demand. SPC is proposing to adhere to their current short-term (24-hour or less) and annual emission limits. The annual emission limits were developed on the assumption that the SPP would not exceed 4,992 hours per year of full load operation and have no more than 312 startups and 312 shutdowns per year. These hours of operation were based on a very balanced assumption of quarterly operations; 78 startups, 78 shutdowns and between 1,231 and 1,258 hours of full load operation per quarter. SPC now proposes four new operational scenarios to be taken into consideration; a peak 1st quarter, a peak 2nd quarter, a peak 3rd quarter and a peak 4th quarter operational scenario. AIR QUALITY Table 1 shows the original proposed quarterly operation for SPC, on which the quarterly and annual emission limits were calculated. AIR QUALITY Tables 2 through 5 show the four new operational scenarios proposed by SPC.

AIR QUALITY Table 1
Original Operation Scenario

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	*Annual*
Number of Startups	78	78	78	78	**312**
Number of Shutdowns	78	78	78	78	**312**
Hours of Full Load Operation	1,231	1,245	1,258	1,258	**4,992**

AIR QUALITY Table 2
Proposed Peak 1st Quarter Operation Scenario

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	*Annual*
Number of Startups	**90**	69	78	75	312
Number of Shutdowns	**90**	69	78	75	312
Hours of Full Load Operation	**2,100**	540	1,258	1,000	4,898

AIR QUALITY Table 3
Proposed Peak 2nd Quarter Operation Scenario

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	*Annual*
Number of Startups	70	**91**	78	75	314
Number of Shutdowns	70	**91**	78	75	314
Hours of Full Load Operation	516	**2,123**	1,258	1,094	4,475

AIR QUALITY Table 4
Proposed Peak 3rd Quarter Operation Scenario

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	*Annual*
Number of Startups	70	78	**92**	72	312
Number of Shutdowns	70	78	**92**	72	312
Hours of Full Load Operation	512	1,245	**2146**	1,085	4989

AIR QUALITY Table 5
Proposed Peak 4th Quarter Operation Scenario

	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	*Annual*
Number of Startups	70	72	78	**92**	312
Number of Shutdowns	70	72	78	**92**	312
Hours of Full Load Operation	516	1,055	1,258	**2,146**	4,975

SPC proposes to use each peak operational scenario as the basis for the quarterly emission limits, but maintain the current annual emission limits as shown in AIR QUALITY Table 6. SPC proposes to modify the underlying assumptions for the quarterly emission limits from the original assumptions in AIR QUALITY Table 1 to the peak quarterly assumptions in AIR QUALITY Table 6.

AIR QUALITY Table 6
Peak Quarterly Operation Scenario

Number of Shutdowns	90	91	92	92	312
Hours of Full Load Operation	2,100	2,123	2146	2146	4,992

Assumptions for 1st quarter are from AIR QUALITY Table 2.
Assumptions for 2nd quarter are from AIR QUALITY Table 3.
Assumptions for 3rd quarter are from AIR QUALITY Table 4.
Assumptions for 4th quarter are from AIR QUALITY Table 5.
Assumptions for the annual are from AIR QUALITY Table 1.

Based on these proposed changes in the underlying assumptions of the quarterly operation of the SPP, SPC proposes to change the quarterly emission limits from what is shown in AIR QUALITY Table 7 to what is shown in AIR QUALITY Table 8.

AIR QUALITY Table 7
Current Quarterly and Annual Emissions Limits
(lbs)

Pollutants	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
NOx	159,994	152,063	153,547	163,284	628,888
SOx	9,879	9,338	9,432	10,087	38,736
CO	122,599	117,762	118,461	124,172	482,994
VOC	12,222	11,828	11,896	12,374	48,320
PM10	24,342	24,594	24,828	24,828	98,592

Quarterly and annual emissions are based on the operational assumptions stated in AIR QUALITY Table 1

AIR QUALITY Table 8
Proposed Quarterly and Annual Emissions Limits
(lbs)

Pollutants	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
NOx	267,426	253,962	256,745	273,369	628,888
SOx	16,632	15,725	15,898	17,002	38,736
CO	181,068	173,440	175,346	185,092	482,994
VOC	17,922	17,314	17,505	18,320	48,320
PM10	40,320	40,768	41,216	41,216	98,592

Quarterly and annual emissions are based on the operational assumptions stated in AIR QUALITY Table 6
Note that there is no change in the proposed annual emission limits.

Mitigation Measures

Because SPC is not proposing to change the short-term or annual emission limits, they propose no further mitigation measures beyond those already implemented. SPC has also surrendered the ERCs proposed for the planned combined cycle power plant

operation, well in advance of the required deadline (which was approximately spring of 2003). AIR QUALITY Table 9 shows the surrendered quarterly offsets, excluding 402,192 lbs of NOx credits provided by the California Air Resources Board (CARB). Comparing AIR QUALITY Tables 8 and 9, and not including the CARB ERCs, a short fall of NOx and VOC offsets can be seen in all four quarters, while PM10 and SOx are more than fully mitigated. It is staff's opinion that the excess PM10 and SO2 emission reductions can only partially offset the NOx and VOC shortfalls and thus the CARB ERCs will be needed to offset the rest to a level of insignificance.

AIR QUALITY Table 9
Surrendered Quarterly Offsets
(lbs)

Pollutants	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
NOx	93,826	99,771	94,504	104,361	392,462
SOx	26,174	25,847	28,399	25,618	106,038
VOC	13,949	14,104	14,259	14,259	56,571
PM10	72,121	73,748	74,299	73,758	293,926

As previously mentioned, AIR QUALITY Table 9 does not include 402,192 lbs of NOx credits provided by the California Air Resources Board (CARB). These credits were provided by CARB under the Governor's Executive Orders in 2001 as short-term mitigation for extended simple cycle operations of the Sunrise facility. Sunrise may use the CARB credits through the year 2003, beyond which they will no longer be available. The CARB credits are not assigned to any particular quarter within the year. They are generally agricultural and diesel truck emission reductions. Simply dividing the CARB credits evenly into each quarter will not provide adequate protection against the emission limits proposed in each quarter in AIR QUALITY Table 8. Therefore, the CARB credits must be allocated unevenly as needed in each quarter, as the actual operational emissions are committed. Staff recommends that a protocol be added to Condition of Certification AQ-17 to facilitate the reporting requirements necessary to implement this uneven allocation of the CARB credits thus ensuring compliance with the quarterly and annual emission limits.

CONCLUSIONS

Staff concludes that the proposed change of simple-cycle quarterly operations by the SPC will not cause a significant impact on the ambient air quality of the San Joaquin Valley with the modification recommended by staff. Staff recommends the approval of the petition with the following changes to the Condition of Certification AQ-17 for the Sunrise Power Project. The proposed modification retains the intent of the original Commission Decision and Conditions of Certification.

Proposed Modifications to the Conditions of Certification

Deleted text is shown in ~~strikethrough~~ and new text is <u>underlined.</u>

AQ-17 Quarterly and annual emissions from both CTGs combined shall not exceed any of the following limits:

For simple cycle operation:

During the year of 2001 (units are in pounds):

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
PM10	0	9,400	41,216	32,442	83,058
SOx (as SO2)	0	3,734	15,897	13,248	32,880
NOx (as NO2)	0	59,398	256,754	213,971	530,123
VOC	0	2,976	17,504	15,581	36,061
CO	0	30,338	175,346	156,685	362,369

During the year of 2002 & 2003 (units are in pounds):

	~~1st Quarter~~	~~2nd Quarter~~	~~3rd Quarter~~	~~4th Quarter~~	~~Annual Total~~
~~PM10~~	~~24,342~~	~~24,594~~	~~24,828~~	~~24,828~~	~~98,592~~
~~SOx (as SO2)~~	~~9,879~~	~~9,338~~	~~9,432~~	~~10,087~~	~~38,736~~
~~NOx (as NO2)~~	~~159,994~~	~~152,063~~	~~153,547~~	~~163,284~~	~~628,888~~
~~VOC~~	~~12,222~~	~~11,828~~	~~11,896~~	~~127,374~~	~~48,320~~
~~CO~~	~~122,599~~	~~117,762~~	~~118,461~~	~~124,172~~	~~482,994~~

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
PM10	40,320	40,768	41,216	41,216	98,592
SOx (as SO2)	16,632	15,725	15,898	17,002	38,736
NOx (as NO2)	267,426	253,962	256,745	273,369	628,888
VOC	17,922	17,314	17,505	18,320	48,320
CO	181,068	173,440	175,346	185,092	482,994

For combined cycle operation:

Annual emission limits only

PM10: 269,651 lbs/year
SOx (as So2): 24,259 lbs/year
NOx (as No2): 311,337 lbs/year
VOC: 87,674 lbs/year
CO: 507,978 lbs/year
[District Rule 2201]

Protocol: Each calendar month in a twelve consecutive month rolling emissions total will commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions total to determine compliance with annual emission limits will be compiled from the twelve most recent calendar months. [District Rule 2201]

While operating as a simple cycle power plant, the applicant shall submit to the CPM for approval the following summary of emissions and mitigation allocation in the quarterly reports required in Condition of Certification AQ-3.

- Total monthly and quarterly NOx emissions as reported by the CEM.
- Total monthly and quarterly CO emission as reported by the CEM.
- Total monthly and quarterly fuel usage as reported by the fuel meter.
- The most recent source test results (in units of lbs of emission per unit fuel use) for PM10, SO2 and either VOC or CO/VOC surrogate and their respective dates.

While operating as a simple cycle power plant, the applicant shall submit for approval by the CPM, a single table for each quarter in which the applicant shall show the quarterly emissions and mitigation in the following manner. The applicant shall include such a table or an equivalent table approved by the CPM for each quarter in the calendar year in each quarterly report submitted by the applicant.

	First Quarter		
	Actual Emissions as recorded or calculated (lbs)	ERCs Surrendered as allocated by AQ-18 (lbs)	CARB ERC allocation annual total not to exceed 402,192 lbs (lbs)
NOx			
CO			
VOC			
PM10			
SOx			
First Quarter Total CARB ERCs Allocated			

Verification: The Project owner shall provide records of the emissions as part of the quarterly reports of Condition **AQ-31**.